

Approval and Communication of Refinery, Maintenance, or Engineering Instructions

Document No.: RI-368	Title: Mechanical Integrity	Current Date: 12/2010
Action: <input type="checkbox"/> New <input checked="" type="checkbox"/> Revision <input type="checkbox"/> Cancellation		Next Revision Due: 12/2015
Responsible Organization: Equipment Reliability		Position to Contact With Questions/Suggestions: Reliability Manager, ext. 2-5476
Summarize Rewritten Material: General Instruction Rewrite. Appendix IV "Notification of Critical Equipment Due for Inspection" was removed from this Instruction. Operational Excellence Reliability Intelligence (OERI) is the new tool to report equipment due for inspection.		
Review: Minor <input type="checkbox"/> Complete <input checked="" type="checkbox"/>		

REQUIRED COMMUNICATION/TRAINING

If Type 2 or Type 3 training is necessary – Instruction Owner is responsible for developing the training material and must work with Development Department Manager and Managers of affected personnel to coordinate training of affected personnel and documentation of training.

This document should be reviewed by:	Type 1 Simple Change	Type 2 On-The-Job Training	Type 3 Classroom Training
All Refinery Personnel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Operations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maintenance & Reliability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Technical	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

APPROVALS

Instruction Owner: Don Kinkela	Development Manager: <i>(first signature before final routing)</i> Dean Van Bockern
Operations Manager: Bruce Chinn	Technical Services Manager: Barbara Smith
HES Manager: Jeff Hartwig	Maintenance & Reliability Manager: Jay Peterson
Refinery Manager: <i>(final signature)</i> Mike Coyle	Other Manager:

On Completion – Instruction Owner will send file and message to IPC to post on the Refinery server.

Necessary Approval for Instructions:

- | | |
|---|---|
| <ul style="list-style-type: none"> • Refinery Instructions: • Safe Work Practices: • Emergency Plans (400 Series RIs): • Engineering Instructions: • Maintenance Instructions: • Cancellation of Instruction: | <ul style="list-style-type: none"> Development, Operations, HES, and Refinery Manager Development, Operations, Maintenance & Reliability, HES, and Refinery Manager Development, Operations, Maintenance & Reliability, HES, and Refinery Manager Technical and HES Manager Maintenance & Reliability and HES Manager Owner and Refinery or Appropriate Dept. Manager |
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RICHMOND REFINERY INSTRUCTIONS

PROCESS SAFETY MANAGEMENT

MECHANICAL INTEGRITY

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APPENDIXES:

- I. MECHANICAL INTEGRITY WORK PROCESS FLOW
- II. EXAMPLE MECHANICAL INTEGRITY PROGRAM FOR EACH EQUIPMENT TYPE:
 - Pressure Vessels
 - Tanks
 - Piping Systems
 - Relief and Vent Systems and Devices
 - Controls, Emergency S/D Systems, Alarms
 - Pumps, Compressors, Drivers and General Mechanical Equipment
 - Fire Protection Systems
 - Fired Heaters and Boilers
 - Heat Exchangers
 - Electrical Distribution System Equipment
- III. MECHANICAL INTEGRITY RELATED REFINERY INSTRUCTIONS

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1.0 PURPOSE AND OBJECTIVES

- 1.1 This document is intended for use by all Refinery employees and contractors whose work impacts the Mechanical Integrity of process equipment. This Refinery Instruction is written as a performance based standard like the original underlying regulations.
- 1.2 The Mechanical Integrity Program at our Refinery is designed with the intent of achieving the following:
 - *1. Refinery safety and environmental objectives.
 - 2. Prevent incidents and reduce the number of unplanned shutdowns or slowdowns of plants and equipment.
 - 3. Meet all the legal requirements required by both Federal (CFR 1910.119) and State of California OSHA (Title 8, Section 5189).
 - 4. Standardize Mechanical Integrity work practices and understanding.
- 1.3 The guidelines set forth in this document will reflect the objective of continuously improving our work and business practices. Over the long-term, Mechanical Integrity must be built into the work processes used for everyday work. Mechanical Integrity lays a foundation for good business practices that will help sustain and improve the Richmond Refinery competitive position.
- 1.4 This document is not designed as a stand-alone; rather, it is a map to the elements of Mechanical Integrity that are included in the more detailed codes, procedures, and standards we already use. This document generally does not assign detailed roles and responsibilities that are organization specific. Instead, the Refinery Instruction will focus on the "What's & Why's" of Mechanical Integrity. "When, Where, Who and How" are detailed in work function related documents; e.g., Engineering Instructions, Maintenance Instructions, Operating Standards, work group, plant or equipment specific procedures, and checklists. Example work functions include elements like designing, constructing, operating, maintaining, inspecting, purchasing, et al.

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2.0 SCOPE

2.1 The CAL-OSHA Process Safety Management (Title 8, Section 5189) regulation requires us to have a Mechanical Integrity Program. OSHA places the responsibility for Mechanical Integrity on the end user. The objective is to ensure that equipment is properly designed, procured, fabricated, installed, and then operated, inspected, and maintained in a manner that prevents hazards to employees and the community. Mechanical Integrity includes the following types of equipment:

1. Pressure Vessels
2. Tanks
3. Piping Systems (e.g., Fittings, Valves, Filters, Strainers)
4. Relief and Vent Systems and Devices
5. Controls, Emergency Shutdown Systems, Alarms
6. Pumps, Compressors, Drivers, and General Mechanical Equipment
7. Fire Protection Systems
8. Fired Heaters and Boilers
9. Heat Exchangers
10. Electrical Distribution System Equipment

2.2. The individuals responsible and accountable for the elements of Mechanical Integrity vary. Individuals and work groups will define their detailed roles and responsibilities in their related documents; e.g., Operating Standards, Maintenance Instructions, Engineering Instructions, Candidates Manual, et al. If your job function impacts Mechanical Integrity (e.g., designing, constructing, operating, maintaining, inspecting, et al.), you have a responsibility to ensure the work you're performing is consistent with the performance standards of this RI and related documents.

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3.0 ELEMENTS OF MECHANICAL INTEGRITY PROGRAM

The Mechanical Integrity process has common elements that apply to all types of equipment.

*3.1 Design

Developing a design that is technically correct is the first step for ensuring the Mechanical Integrity of the equipment. Company, Jurisdictional and Industry Codes and Standards are used for the design of our equipment. The primary guiding design documents are the Chevron Engineering Standards (CES). Examples of these referencing documents are included in **Appendix II**. Where Company or Refinery standards or codes do not exist or apply, we will apply industry recognized and accepted good engineering practices.

*3.2 Fabrication and Installation

Equipment fabrication and installation will be performed in accord with the applicable codes and standards used for the design of the equipment. Some examples of the applicable fabrication standards and codes are listed in the attached **Appendix II**.

Appropriate field and fabricator shop checks and inspections shall be performed to verify that equipment is properly manufactured and installed in accord with the design specifications. All field and shop fabricator inspections must be specified by the responsible designer, project engineer, or inspection/Quality Assurance, (Q.A.), representatives in accord with the applicable industry, or Company codes and standards. Example codes and standards are listed in **Appendix II**. This Q.A. effort will include Pre-Startup Safety Reviews (PSSR), Management of Change (MOC), and where necessary, Materials Q.A. efforts like Positive Material Identification (PMI); e.g., using a material alloy analyzer to verify metallurgy. PSSRs help ensure that requirements from Process Hazards Analysis, Management of Change, Process Safety Information, etc., have been met.

*3.3 Inspection and Testing

1. The inspections and tests vary with equipment type as referenced in **Appendix II**. For example, this includes the alarm tests performed by Operations, advanced non-destructive examination (NDE) performed by qualified Inspection personnel, or as-inspected and repaired shop or field inspections completed by Maintenance. Contractors performing work for Chevron are expected to utilize the same codes and standards used by Company personnel.

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- *2. Inspection and testing is one method for preventing equipment or component failures. Systems are in place to ensure that the inspection and testing programs for all equipment are documented and appropriate. These systems must document the basis for the frequency and scope of inspection or preventive and predictive maintenance, (P.M.), tasks. The frequency and scope will be based upon the potential failure mechanisms, the potential consequences, the intervals between detectable wear and mechanical failure and industry recognized codes and standards. Examples of the systems used to document these efforts include Operating Manuals, hand-held electronic Intellectrac computers, operator routine duties lists, Meridium Equipment Reliability Information Systems (ERIS), Maximo the Computerized Maintenance Mgmt System (CMMS), et al.
- 3. Mechanical Integrity related inspection activities will be recorded. This includes operator routine duties, inspection activities integral to maintenance repairs, preventative or predictive tasks, and the Non-Destructive Examination (NDE) work completed by inspection personnel. The record must include the date of the inspection, the method used, the name of the individual conducting the inspection, the equipment number (both plant equipment number and Location ID# (EQID), or Asset ID, any recommendations and the results of the inspection. Examples of this documentation include operator routine duties sheets, maintenance repair reports, history briefs, completed work order, inspection isometric drawings, vibration surveillance reports, et al.

3.4 Equipment Deficiencies

- *1. Operating personnel will have a lead role in evaluating work requests and initiating corrective actions whenever an equipment deficiency is identified. The deficiencies may be identified through existing operator routine duties, on-line condition monitoring and surveillance inspection activities, or by monitoring critical process variables. Support service personnel also play a large role in identifying deficiencies through their routine predictive and preventative duties; e.g., on-stream ultrasonic thickness gauging, machinery vibration, infrared surveillance, coupling inspection, lubricant checks, et al.
- *2. An important part of ensuring the Mechanical Integrity of equipment is to properly correct deficiencies once they are detected. Deficiencies can be simply mechanical (e.g., corrosion) or may include how we're operating the equipment relative to established Operating limits. Representatives from Operations, Maintenance, Reliability and Engineering have the final

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decision-making responsibility for determining the corrective action for any deficiency. However, all employees impacted by Mechanical Integrity have the right and obligation to report deficiencies. Our Refinery will follow the process outlined in the attached **Appendix 1** when addressing deficiencies.

- *3. When equipment with deficiencies is covered by jurisdictional or regulatory agencies, line managers and supervisors will seek input from the appropriate support service personnel. These support personnel will outline the alternatives for repair (including temporary), design, alteration or additional inspection, and timing required for a response. For example, our boilers are covered by both industry codes and state regulations; decisions affecting them must include the inspection personnel that are licensed by regulatory agencies to permit operation of the equipment.
- *4. Deficiency repairs may be temporary or permanent or require altering the operation, taking the equipment out-of-service, completing a Fitness For Service evaluation, revising a procedure that would mitigate the deficiency, or simply continuing to operate within established Operating limits. Increasing the inspection frequency is an example of how to address equipment deficiencies. The deficiency risk will be evaluated before determining an action plan. Operations personnel have the responsibility to communicate actions associated with equipment deficiency. Response timeliness is impacted by the degree of deficiency and the alternative selected. Reporting and Tracking deficiencies will be managed in several ways including the MOC process, CMMS, Operations Daily Order Book, and Unit Reliability Briefs (URB's). Cancelled work requests have a required explanation field in CMMS.
- 5. All temporary repairs will be documented, tracked, and targeted for a permanent repair date through MOC and other systems. Operation of a temporary repair beyond its targeted permanent replacement date is permitted in some instances; e.g., regulations governing Volatile Organic Compounds (VOC) and VOC equipment determine a finite repair date. In instances where use of a temporary repair will be extended, the basis for the decision and future inspection and/or repair dates must be documented through the MOC process. All repairs (both temporary and permanent) must comply with the applicable codes and standards governing the piece of equipment. Refer to **Appendix II** for the applicable codes and standards.

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3.5 Maintenance and Repairs

- *1. Line managers and supervisors will ensure trained and qualified Company mechanics or contractors are used to complete maintenance repairs. Maintenance personnel will identify and develop written procedures and checklists or job aids based on the criticality and difficulty of the tasks and equipment involved.
- 2. Line managers and supervisors will ensure Company mechanics and contractors have access to the appropriate documents, procedures, job aids or checklists, or records, and are used and signed-off where appropriate. Examples of required documents include P&IDs, EWOs, Inspection Recommendations, Logic Diagrams, Test Procedures & Frequencies, Schematic & Wiring Diagrams, Digital System Program Lists, Approved Spare Parts Lists, OEM Manuals, Major Machinery Repair Checklists, Heat-Exchanger or Reactor Torque Reports, et al.
- *3. Routine duties lists must include a system for identifying and implementing preventative or predictive maintenance tasks and frequencies; e.g., lubrication, filter changes, coupling inspections, et al. Background information for these P.M. efforts may be located in several different records systems (e.g., Operating Procedures, OEM Manuals, Computerized Maintenance Management System, Equipment Reliability Information System, Intellectrac). Maintenance and reliability personnel assigned to a geographic work area are responsible for understanding the P.M. tasks for their equipment and the status of these tasks.
- *4. The personnel performing maintenance and repairs must verify they have received the proper materials or spare parts for the job. This may include verification of materials through the Positive Material Identification (PMI) Process. Refer to Section 3.8 for additional training requirements.
- *5. Repairs will be inspected or tested if required by regulatory requirements, industry codes, or Company standards. All repairs must be documented.
- *6. Maintenance and Reliability personnel are responsible for updating the affected records systems upon receipt; e.g., corrosion or vibration monitoring systems. The deletion, addition or change of existing equipment shall follow the Refinery Add/Change/Delete process.

***3.6 Operation**

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Operating personnel must ensure the equipment is operated within established Operating limits. Line managers and supervisors must ensure procedures are in place to monitor the process variables that affect these; examples include temperature, flow, level, pressure, watts, amps, vibration, and chemical composition (e.g., corrosivity). Where the control and monitoring equipment permits, these limits must be programmed into the existing primary control and alarm systems so that comparison is automatic. If automatic comparison is not possible, the critical variables must be included in routine duties for operating and support personnel; e.g., safe fill height on a manually gauged tank or vibration levels for API-610 pumps.

3.7 System to Report on Equipment Integrity

State PSM regulations require us to have a system for reporting deficiencies and ensuring there is closure on these reports and recommendations. Some examples of how we presently accomplish this are listed below:

- *1. Written communication in the form of a memo or e-mail
- 2. Engineering TSS Job Logs and Engineering Work Orders (EWOs)
- 3. CMMS Maintenance Work Requests
- *4. Turnaround documents such as Turnaround Added Work (TAW's), S/D Work Lists, Valve Repair List, etc.
- *5. Unit Reliability Briefs
- *6. Pre-Startup Safety Reviews (PSSR)
- 6. Hazards and Operability Studies (HAZOPS)
- 7. Reliability Recommendation such as RER, ICA&E, and Inspection work requests
- 8. Meridium-Equipment Reliability Information Systems (ERIS)
- 9. Management of Change (MOC)
- *11. Quality Assurance (Q.A.)/Quality Control (Q.C). Process
- 10. Existing process control and alarm systems
- 11. Operations or Maintenance shift turnovers

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12. Incident Reporting System

3.8 Training

- *1. Each person performing design, fabrication, inspection, testing, operation, maintenance, and repairs must be trained on an overview of the process and its hazards. This will ensure that he/she can perform job tasks in a safe manner. Personnel performing fabrication and repairs must receive training on procedures, work practices, and verification of proper materials. Personnel performing designs must receive training on codes, standards, specifications, and Process Safety Information requirements. Operating personnel must receive training on Operating limits for equipment, conducting equipment checks and tests (e.g., alarm checks), and how to operate the equipment properly. Purchasing personnel must receive training on ordering equipment, arranging for shop inspections and special documentation (e.g., Certified Material Test Reports), receiving equipment, storing equipment, and dealing with returns and disposal. Maintenance personnel must receive training for their crafts and the tasks they perform. Personnel who receive or install materials from a storehouse or a satellite storage facility must be trained and qualified to recognize that they are receiving and installing the correct materials. Appropriate training must be provided to personnel performing inspection and testing so they know the procedures for conducting and documenting the results (applies to Operations, Maintenance, Technical, Inspection, and Global Procurement).
2. Training programs must be documented and the records retained. The duration records must be retained depends on the frequency of the training, the frequency the tasks are performed by the individual, and the risk associated with the specific task. Personnel involved with training, or specific departments and work groups must have a system that defines that criticality (consequences) and frequency of the tasks performed as a basis for establishing the required training, training frequency, and training records. Training governed by jurisdictional agencies (e.g., OSHA, USCG) will be conducted at the frequency specified and the records updated and retained in accord with the regulations. For example, records for Refinery Compliance Training can be refreshed on the required individual's anniversary date after completing the new training.
3. The training records will include one-time training (e.g., apprenticeship records) refresher training, specialty training and just-in-time training (e.g., use of Tensioning Equipment). In some instances, "just-in-time" training

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is an appropriate approach to specific training needs. If used to qualify personnel for specific tasks, skills or knowledge, this form of training also requires a record. Line managers and supervisors are responsible for ensuring individual employees or contractors are trained and qualified by periodic review of the training and qualification records.

3.9 Auditing

1. An on-going auditing effort that involves all employees over the long-term will help ensure adherence to the Mechanical Integrity Elements. Portions of this auditing are integral to existing work processes; e.g., alarm-checks, the use of checklists and procedures, training and qualifications, et al. These routine duty audits are an integral part of quality in daily work and can be used to identify potential gaps in routine duties and procedures.
- *2. Compliance audits are performed at least once every three years to meet the California Process Safety Management, California Accidental Prevention Program, Environmental Protection Agency Risk Management Program requirements (Refer to RI-373 – Compliance Audits).

*3.10 Management of Change

Management of Change (MOC) is a part of the Mechanical Integrity Element. The MOC process will be initiated whenever there is a change to the plant operation, equipment, or work processes that impact Mechanical Integrity. Refer to the applicable Refinery Instruction (RI-370) for MOC requirements.

3.11 Materials Quality Assurance

1. The purpose of Materials Q.A. is to prevent fabrication and material related equipment failures. Some examples of how these failures occur include:
 - a. Mismatching the design and material used (wrong material, component, or equipment unit specified).
 - b. Inadvertently using the incorrect material, component, or equipment unit during fabrication, construction, or maintenance.
 - c. Incorrect assembly, fabrication, construction, or maintenance (quality work process not used).

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2. To prevent occurrences like these, the Refinery will include the following elements in our Materials Q.A. efforts:
 - a. Specify equipment and parts to the applicable industry or Company codes and standards.
 - b. Use qualified and approved original equipment manufacturers (OEMs) or engineering approved equivalent, distributors, and repair facilities.
 - c. Train and qualify personnel involved with material procurement, handling, and installation.
 - *d. Specify appropriate source or site inspection and witness hold points in accord with industry or Company codes and standards (ETC, Q.A. or Global Procurement can help here).
 - e. Select OEMs and distributors based on the total cost of ownership (TCO or Life Cycle Cost) and by using quality processes like Chevron Supplier Quality Improvement Process (CSQIP) or the Refinery Materials Standards Teams.
 - f. Periodic OEM, repair facility, or distributor audits, requalification, and testing.
 - g. Provide written procedures for material procurement, handling, verification, and installation (this must include establishing a Positive Material Identification Process for selected materials).
 - h. Provide legible tags or labels on critical parts and equipment.
 - i. Provide redundancy in material verification work processes. At least one step must include verification by the final individual that installs the part, equipment, chemical, or lubricant.
 - j. Establish and monitor work processes that correlate materials and parts to specific maintenance or construction jobs and tasks. The work processes must include a record of material used on specific jobs or equipment units.
 - k. Establish and monitor metrics related to Material's Q.A., e.g., PMI, Weld Inspection, Q.A. Process.

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- *3. The following matrix matches Materials Q.A. work functions mentioned in Section 3.11 (2) with roles and responsibilities.

MATERIALS Q.A. ROLES MATRIX

*ELEMENT From 3.11 (2)	DEPARTMENT/WORK FUNCTION					
	MAINT.	OPS	GLOBAL PROCUREMENT	ETC Q.A.	INSP./REL.	ENGR.
2.(a)	X		X		X	X
2.(b)	X		X	X	X	X
2.(c)	X		X	X	X	X
2.(d)	X		X	X	X	X
2.(e)			X	X		X
2.(f)	X		X	X		X
2.(g)			X	X		X
2.(h)	X	X		X		
2.(i)	X	X	X		X	
2.(j)	X		X		X	X
2.(k)	X		X	X	X	

3.12 Process Safety Information (PSI)

Accurate, readily available Process Safety Information is required to operate and maintain the plants without incident. To achieve the required accuracy and availability, the Mechanical Integrity process necessitates striving towards only one original for each record (drawing, data, document) and making that original available electronically. The PSI Refinery Instruction (RI-362) defines what PSI records are required, who's responsible for their origination and maintenance, the format and content of the data, and who will have write versus read-only access. The PSI records will be kept current through the MOC process.

3.13 Process Hazards Analysis (PHA)

The Mechanical Integrity Element requires us to verify that equipment is suitable for its process application and operating context. This includes a review of the Process Safety Information (PSI) as a part of the Hazards Analysis Process (e.g., HAZOPS, IPR's, What-If Analysis, FMEA, etc.) to validate that the equipment is suitable for the current or proposed process design conditions. This analysis can uncover deficiencies which could result in poor Mechanical Integrity and become action items for design changes in new or existing installations. The PHA Refinery Instruction (RI-363) identifies responsibilities and schedule commitments for conducting the PHAs.

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***3.14 Near Loss, Event Reporting and Incident Investigations**

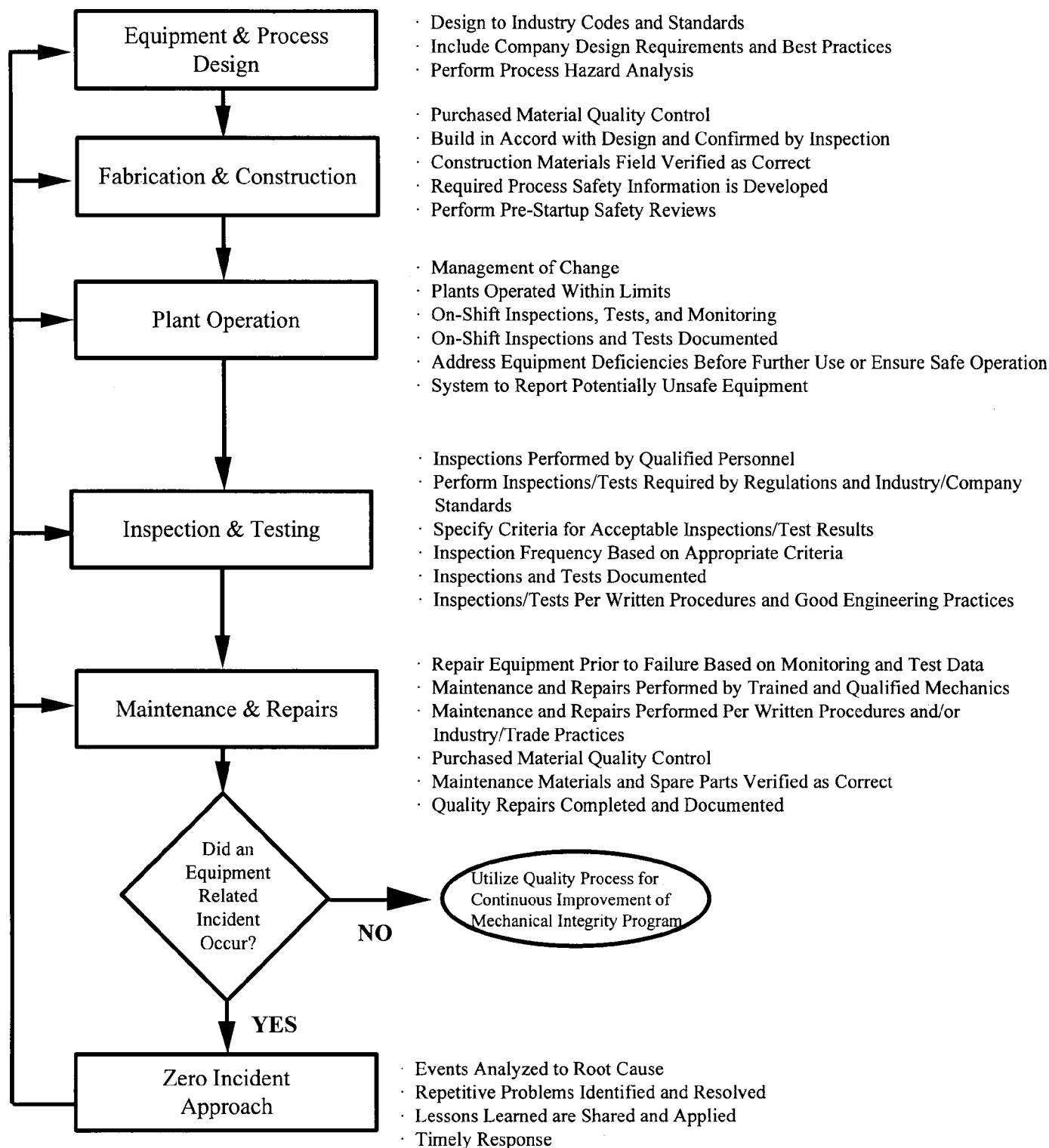
1. Incident Investigations and Reporting is one of several Process Safety Management Systems designed to prevent the occurrence of and/or minimizing the consequences of events that have, or could have a detrimental effect on the safety of workers, impact to the community, and operation of the Richmond Refinery. The basic purpose for reporting and investigating losses and near losses is to prevent the recurrence of such events and promote a safer and loss-free work environment. Refinery Instruction RI-371 contains specific information describing the Richmond Refinery Loss/Near Loss Reporting and Investigation policy.

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APPENDIX I MECHANICAL INTEGRITY

MECHANICAL INTEGRITY WORK PROCESS FLOW (Complies With Both Federal & State of California PSM Regulations)



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PROGRAM BY EQUIPMENT TYPE

APPENDIX II MECHANICAL INTEGRITY

Equipment Type	M. I. Elements	Pressure Vessels & Drums	Tanks	Piping Systems	Relief Systems, Vents & Other Devices	Controls, ESDs and Alarms	Pumps	Electric Drivers	Turbines	Compressors & Blowers	Fire Protection Systems	Fired Heaters & Boilers	Heat Exchangers	Electrical Distribution System Equipment
3.1	Design	State of California Title 8 Safety Orders, Chevron Engineering Standards (CES), NBIC, Applicable Jurisdictional Agencies, ASME Sect. I, II, V, VIII & IX, API-510, Proj. Std's, ETC Guidelines.	State of California Title 8 Safety Orders, Chevron Engineering Standards (CES), Applicable Jurisdictional Agencies, Global Refining Fire Protection Manual, API-620, 650, 653, 1104, and Applicable Jurisdictional Agencies (e.g., esp. w/ over-water or off-plot)	State of California Title 8 & 17 Safety Orders, NBIC, Chevron Engineering Standards (CES) (Corrosion & Welding), ASME Sections II, V, IX, ANSI B31.1, 31.3, 31.4, 31.8, API-570, 1104, and Applicable Jurisdictional Agencies	State of California Title 8 & 17 Safety Orders, NBIC, ASME Sect. I, II, V, VIII-1, IX, API RP 520-1 & II, API RP 521, API STD 2000, Chevron Engineering Standards (CES), ETC Guidelines	Chevron Engineering Standards (CES), Industry Stds., NEC, RPS-1586, 3551 & 3552, API RP-500 & 500A, API-670, ANSI/ISA S5.1-5.4, S7.3, S12.4, S12.12, S18.1, S20, S75.01, S75.18, S82.01	Chevron Engineering Standards (CES), Industry Stds., API-610, 613-615, 670, 671, 674, 675, 676, 682, Global Refining/RER Mechanical Seal Stds., ANSI-B73.1, B73.2, Proj. Std's - MS Series, Lubricant Standards: STLE, Global Refining Salesfax Digest.	Chevron Engineering Standards (CES), Industry Stds., NEC, API-541, 546, 613-615, 670, 671, ANSI-B133 (GT's), Lubricant Std's: STLE, Global Refining Salesfax Digest, OEM's	Chevron Engineering Standards (CES), Industry Stds., API 611-616, 670, 671, ANSI-B133 (GT's), Lubricant Std's: STLE, Global Refining Salesfax Digest, OEM's	Chevron Engineering Standards (CES), Industry Stds., API 613-615, 617-619, 670, 671-673, Lubricant Std's: STLE, Global Refining Salesfax Digest, Jurisdictional Agencies.	Global Refining Fire Protection Manual, Industry Stds., NFPA, State of California Title 8 Safety Orders, Fed OSHA, State Fire Marshall's Office, City of Richmond Building Codes, UBC	State of California Title 8 & Title 17 Safety Orders, Chevron Engineering Standards (CES), NFPA, NBIC, ASME Sect. I, V, VII, VIII, IX, ANSI B31.1 & B31.3, API RP-530, 560, 573, Global Refining Fire Protection Manual, Global Refining Proj. Std's, RPS 2829, 4090, & HIR-DS-1350.	State of California Title 8 & 17 Safety Orders, Chevron Engineering Standards (CES), ASME Sections VIII, IX, API-660, 661, 572 & Proj. Std's API-DS-660 App B & C, API-DS-661	State of California Title 8 Safety Orders, NEC, UBC, City of Richmond Building Codes, Chevron Engineering Standards (CES), API-500A, Richmond Elec. Design Guide.
3.2	Fabrication	Per Codes & Standards from 3.1, Applicable Richmond & Global Refining Std. Dwg's., Jurisdictional Agencies	Per Codes & Standards from 3.1, Applicable Richmond & Global Refining Std. Dwg's., Jurisdictional Agencies	Per Codes & Standards from 3.1, Applicable Richmond & Global Refining Std. Dwg's., Jurisdictional Agencies	Per Codes and Std's from 3.1, Applicable Richmond & Global Refining Std. Dwg's., Jurisdictional Agencies.	Per Stds. from 3.1, Applicable Richmond Standard Dwg's. and Global Refining Std. Dwg's. GB-J1143, J1146, J1163, J1166, J1171, J1182, J1183	Per Stds. from 3.1, Applicable RER Guidelines, Maintenance & Engineering Instructions, Equipment Specific OEM Procedures, Applicable Richmond & Global Refining Standard Dwg's.	Per Stds. from 3.1, Applicable RER/IER Guidelines, Maintenance & Engineering Instructions, Equipment Specific OEM Procedures, Applicable Richmond & Global Refining Standard Dwg's.	Per Stds. from 3.1, Applicable RER Guidelines, Maintenance & Engineering Instructions, Equipment Specific OEM Procedures, Applicable Richmond & Global Refining Standard Dwg's.	Per Stds. from 3.1, Applicable RER Guidelines, Maintenance & Engineering Instructions, Equipment Specific OEM Procedures, Applicable Richmond & Global Refining Standard Dwg's.	Per Stds. from 3.1, Applicable Maintenance & Engineering Instructions, Equipment Specific OEM Procedures, Applicable Richmond & Global Refining Standard Dwg's.	Per Stds. from 3.1, Applicable Maintenance & Engineering Instructions, Equipment Specific OEM Procedures, Applicable Richmond & Global Refining Standard Dwg's., ETC/Mat Lab Guidelines.	Per Stds. from 3.1, Applicable Maintenance & Engineering Instructions, Equipment Specific OEM Procedures, Applicable Richmond & Global Refining Standard Dwg's.	Per Stds. from 3.1, Applicable IER Guidelines, Maintenance & Engineering Instructions, Equipment Specific OEM Procedures, Applicable Richmond & Global Refining Standard Dwg's.
3.3	Inspection & Testing	Per Codes & Standards from 3.1-3.2, Applicable Refinery, Maintenance & Engineering Instructions, Fixed Equip. Inspection Manuals, Operating Standards, Meridum Reports, ETC/Mat Lab Guidelines, e.g., Wet H2S	Per Codes & Standards from 3.1-3.2, Applicable Refinery, Maintenance & Engineering Instructions, Fixed Equip. Inspection Manuals, Operating Standards, Meridum Reports and Jurisdictional Agencies, e.g., USCG, BAAQMD, RWQCB	Per Codes & Standards from 3.1-3.2, Applicable Refinery, Maintenance & Engineering Instructions, Fixed Equip. Insp. Manuals, Operating Standards, Meridum Reports and Jurisdictional Agencies, e.g., USCG, State Fire Marshall, RWQCB.	Per Codes & Standards from 3.1-3.2, Applicable Refinery, Maintenance & Engineering Instructions, Fixed Equip. Insp. Manual, Operating Standards, Equipment Specific Checklists, Procedures and Meridum Reports.	Per Codes & Standards from 3.1-3.2, Applicable Refinery, Maintenance & Engineering Instructions, I&E Reliability Candidates Manual, I&E Reliability Procedures, Operating Standards, Equipment Specific Checklists & Procedures	Per Codes & Standards from 3.1-3.2, RER Candidates Manual, RER Guidelines, Applicable Refinery, Maintenance & Engineering Instructions, RER Surveillance Procedures, Operating Standards, Equipment Specific Checklists & Procedures (RER & OEM)	Per Codes & Standards from 3.1-3.2, RER/IER Candidates Manuals, RER/IER Guidelines, Applicable Refinery, Maintenance & Engineering Instructions, RER/IER Surveillance Procedures, Operating Standards, Equipment Specific Checklists & Procedures.	Per Codes & Standards from 3.1-3.2, RER Candidates Manual, RER Guidelines, Applicable Refinery, Maintenance & Engineering Instructions, RER & OEM Procedures, Operating Standards, Equipment Specific Checklists & Procedures.	Per Codes & Standards from 3.1-3.2, RER Candidates Manual, RER Guidelines, Applicable Refinery, Maintenance & Engineering Instructions, RER & OEM Procedures, Operating Standards, Equipment Specific Checklists & Procedures, RER Surveillance Programs	Per Codes and standards from 3.1-3.2, Applicable Refinery, Maintenance or Engineering Instructions, Plant Protection Procedures, Operating Standards, Equipment Specific Checklists and Procedures	Per Codes and standards from 3.1-3.2, Applicable Refinery, Maintenance or Engineering Instructions, Operating Standards, Equipment Specific Checklists and Procedures, Global Refining Fixed Equipment Inspection Manuals & ETC/Mat Lab Guidelines.	Per Codes and standards from 3.1-3.2, Applicable Refinery, Maintenance or Engineering Instructions, Operating Standards, Equipment Specific Checklists and Procedures, Global Refining Fixed Equipment Inspection Manuals & ETC/Mat Lab Guidelines.	Per Codes and standards from 3.1-3.2, Applicable Refinery, Maintenance or Engineering Instructions, Operating Standards, Equipment Specific Checklists and Procedures, OEM Guidelines, IER Guidelines, Richmond City of Richmond CIP.

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RICHMOND REFINERY INSTRUCTIONS

PROCESS SAFETY MANAGEMENT

PROGRAM BY EQUIPMENT TYPE

APPENDIX II MECHANICAL INTEGRITY

Equipment Type	M. I. Element	Pressure Vessels & Drums	Tanks	Piping Systems	Relief Systems, Vents & Other Devices	Controls, ESDs and Alarms	Pumps	Electric Drivers	Turbines	Compressors & Blowers	Fire Protection Systems	Fired Heaters & Boilers	Heat Exchangers	Electrical Distribution System Equipment
3.4	Equipment Deficiencies	Applicable Codes, Standards, Procedures, Instructions and Jurisdictional requirements listed in 3.1-3.3, Precedent, within Operating limits	Applicable Codes, Standards, Procedures, Instructions and Jurisdictional requirements listed in 3.1-3.3, Precedent, within Operating limits	Applicable Codes, Standards, Procedures, Instructions and regulatory requirements listed in 3.1-3.3, Precedent, Fixed Equipment Inspection Manual, within Operating limits	NBIC Appendix C-VI, Precedent, Title 8 & Title 17, PER Candidates Manual, Fixed Equipment Inspection Manuals, Operating Standards, Applicable Refinery, Maintenance or Engineering Instructions, within Operating limits	IER Candidates Manual, Operating Standards, Applicable Refinery, Maintenance or Engineering Instructions, within Operating limits	RER Candidates Manual, Operating Standards, Applicable Refinery, Maintenance or Engineering Instructions, within Operating limits	RER/IER Candidates Manual, RER/IER Guidelines, Operating Standards, Applicable Refinery, Maintenance or Engineering Instructions, within Operating limits	RER Candidates Manual, RER Guidelines, Operating Standards, Applicable Refinery, Maintenance or Engineering Instructions, within Operating limits	RER Candidates Manual, RER Toxic Equipment & Recip. Surveillance Program & Guidelines, Operating Standards, Applicable Refinery, Maintenance or Engineering Instructions, within Operating limits	Plant Protection Procedures, Operating Standards, Applicable Refinery, Maintenance or Engineering Instructions, within Operating limits	Applicable Codes, Standards, Procedures, Instructions and Jurisdictional requirements listed in 3.1-3.3, within Operating limits	Applicable Codes, Standards, Procedures, Instructions and regulatory requirements listed in 3.1-3.3, within Operating limits	Applicable Codes, Standards, Procedures, Instructions and regulatory requirements listed in 3.1-3.3, within Operating limits
3.5	Maintenance & Repairs	Per Applicable Codes, Standards, Guidelines, Procedures & Checklists Referenced in 3.1-3.3	Per Applicable Codes, Standards, Guidelines, Procedures & Checklists Referenced in 3.1-3.3	Per Applicable Codes, Standards, Guidelines, Procedures & Checklists Referenced in 3.1-3.3	Per Applicable Codes (ASME IX), Standards, Guidelines, Procedures & Checklists Referenced in 3.1-3.3	Per Applicable Codes, Standards, Guidelines, Procedures & Checklists Referenced in 3.1-3.3	Per Applicable Codes, Standards, Guidelines, Procedures & Checklists Referenced in 3.1-3.3	Per Applicable Codes, Standards, Guidelines, Procedures & Checklists Referenced in 3.1-3.3	Per Applicable Codes, Standards, Guidelines, Procedures & Checklists Referenced in 3.1-3.3	Per Applicable Codes, Standards, Guidelines, Procedures & Checklists Referenced in 3.1-3.3	Per Applicable Codes, Standards, Guidelines, Procedures & Checklists Referenced in 3.1-3.3	Per Applicable Codes, Standards, Guidelines, Procedures & Checklists Referenced in 3.1-3.3	Per Applicable Codes, Standards, Guidelines, Procedures & Checklists Referenced in 3.1-3.3	Per Applicable Codes, Standards, Guidelines, Procedures & Checklists Referenced in 3.1-3.3
3.6	Operation	Per Applicable RI's, Operating Standards and within established Operating limits	Per Applicable RI's, Operating Standards and within established Operating limits	Per Applicable RI's, Operating Standards and within established Operating limits	Per Applicable RI's, Operating Standards and within established Operating limits	Per Applicable RI's, Operating Standards and within established Operating limits	Per Applicable RI's, Operating Standards and within established Operating limits	Per Applicable RI's, Operating Standards and within established Operating limits	Per Applicable RI's, Operating Standards and within established Operating limits	Per Applicable RI's, Operating Standards and within established Operating limits	Per Applicable RI's, Operating Standards and within established Operating limits	Per Applicable RI's, Operating Standards and within established Operating limits	Per Applicable RI's, Operating Standards and within established Operating limits	Per Applicable RI's, Operating Standards and within established Operating limits
3.7	System to Report Equipment Integrity	Memo, Engineering TSS Job Log, EWO's, Maximo work request/order, PSSR, PHA, RER-IMCR, Insp Tech Rec., MOC, S/D or Turnaround Work List, Safety Suggestion, Maint Mgmt System (MMS), Ops and Maint Turnover, Incident Reporting System (IRS), Reliability d-Bases	Memo, Engineering TSS Job Log, EWO's, Maximo work request/order, PSSR, PHA, RER-IMCR, Insp Tech Rec., MOC, S/D or Turnaround Work List, Safety Suggestion, Maint Mgmt System (MMS), Ops and Maint Turnover, Incident Reporting System (IRS), Reliability d-Bases	Memo, Engineering TSS Job Log, EWO's, Maximo work request/order, PSSR, PHA, RER-IMCR, Insp Tech Rec., MOC, S/D or Turnaround Work List, Safety Suggestion, Maint Mgmt System (MMS), Ops and Maint Turnover, Incident Reporting System (IRS), Reliability d-Bases	Memo, Engineering TSS Job Log, EWO's, Maximo work request/order, PSSR, PHA, RER-IMCR, Insp Tech Rec., MOC, S/D or Turnaround Work List, Safety Suggestion, Maint Mgmt System (MMS), Ops and Maint Turnover, Incident Reporting System (IRS), Reliability d-Bases	Memo, Engineering TSS Job Log, EWO's, Maximo work request/order, PSSR, PHA, RER-IMCR, Insp Tech Rec., MOC, S/D or Turnaround Work List, Safety Suggestion, Maint Mgmt System (MMS), Ops and Maint Turnover, Incident Reporting System (IRS), Reliability d-Bases	Memo, Engineering TSS Job Log, EWO's, Maximo work request/order, PSSR, PHA, RER-IMCR, Insp Tech Rec., MOC, S/D or Turnaround Work List, Safety Suggestion, Maint Mgmt System (MMS), Ops and Maint Turnover, Incident Reporting System (IRS), Reliability d-Bases	Memo, Engineering TSS Job Log, EWO's, Maximo work request/order, PSSR, PHA, RER-IMCR, Insp Tech Rec., MOC, S/D or Turnaround Work List, Safety Suggestion, Maint Mgmt System (MMS), Ops and Maint Turnover, Incident Reporting System (IRS), Reliability d-Bases	Memo, Engineering TSS Job Log, EWO's, Maximo work request/order, PSSR, PHA, RER-IMCR, Insp Tech Rec., MOC, S/D or Turnaround Work List, Safety Suggestion, Maint Mgmt System (MMS), Ops and Maint Turnover, Incident Reporting System (IRS), Reliability d-Bases	Memo, Engineering TSS Job Log, EWO's, Maximo work request/order, PSSR, PHA, RER-IMCR, Insp Tech Rec., MOC, S/D or Turnaround Work List, Safety Suggestion, Maint Mgmt System (MMS), Ops and Maint Turnover, Incident Reporting System (IRS), Reliability d-Bases	Memo, Engineering TSS Job Log, EWO's, Maximo work request/order, PSSR, PHA, RER-IMCR, Insp Tech Rec., MOC, S/D or Turnaround Work List, Safety Suggestion, Maint Mgmt System (MMS), Ops and Maint Turnover, Incident Reporting System (IRS), Reliability d-Bases	Memo, Engineering TSS Job Log, EWO's, Maximo work request/order, PSSR, PHA, RER-IMCR, Insp Tech Rec., MOC, S/D or Turnaround Work List, Safety Suggestion, Maint Mgmt System (MMS), Ops and Maint Turnover, Incident Reporting System (IRS), Reliability d-Bases	Memo, Engineering TSS Job Log, EWO's, Maximo work request/order, PSSR, PHA, RER-IMCR, Insp Tech Rec., MOC, S/D or Turnaround Work List, Safety Suggestion, Maint Mgmt System (MMS), Ops and Maint Turnover, Incident Reporting System (IRS), Reliability d-Bases	Memo, Engineering TSS Job Log, EWO's, Maximo work request/order, PSSR, PHA, RER-IMCR, Insp Tech Rec., MOC, S/D or Turnaround Work List, Safety Suggestion, Maint Mgmt System (MMS), Ops and Maint Turnover, Incident Reporting System (IRS), Reliability d-Bases
3.8	Training & Training Records	Per Sids Listed In 3.1-3.6 and written training & qualification plan.	Per Sids Listed In 3.1-3.6 and written training & qualification plan.	Per Sids Listed In 3.1-3.6 and written training & qualification plan.	Per Sids Listed In 3.1-3.6 and written training & qualification plan.	Per Sids Listed In 3.1-3.6 and written training & qualification plan.	Per Sids Listed In 3.1-3.6 and written training & qualification plan.	Per Sids Listed In 3.1-3.6 and written training & qualification plan.	Per Sids Listed In 3.1-3.6 and written training & qualification plan.	Per Sids Listed In 3.1-3.6 and written training & qualification plan.	Per Sids Listed In 3.1-3.6 and written training & qualification plan.	Per Sids Listed In 3.1-3.6 and written training & qualification plan.	Per Sids Listed In 3.1-3.6 and written training & qualification plan.	Per Sids Listed In 3.1-3.6 and written training & qualification plan.
3.9	Auditing	Against Sids from 3.1-3.6. Refer to Section 3.9 of this RI	Against Sids from 3.1-3.6. Refer to Section 3.9 of this RI	Against Sids from 3.1-3.6. Refer to Section 3.9 of this RI	Against Sids from 3.1-3.6. Refer to Section 3.9 of this RI	Against Sids from 3.1-3.6. Refer to Section 3.9 of this RI	Against Sids from 3.1-3.6. Refer to Section 3.9 of this RI	Against Sids from 3.1-3.6. Refer to Section 3.9 of this RI	Against Sids from 3.1-3.6. Refer to Section 3.9 of this RI	Against Sids from 3.1-3.6. Refer to Section 3.9 of this RI	Against Sids from 3.1-3.6. Refer to Section 3.9 of this RI	Against Sids from 3.1-3.6. Refer to Section 3.9 of this RI	Against Sids from 3.1-3.6. Refer to Section 3.9 of this RI	Against Sids from 3.1-3.6. Refer to Section 3.9 of this RI
3.10	Management of Change	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI
3.11	Materials Quality Assurance	Per Sids Listed In 3.1-3.5	Per Sids Listed In 3.1-3.5	Per Sids Listed In 3.1-3.5	Per Sids Listed In 3.1-3.5	Per Sids Listed In 3.1-3.5	Per Sids Listed In 3.1-3.5	Per Sids Listed In 3.1-3.5	Per Sids Listed In 3.1-3.5	Per Sids Listed In 3.1-3.5	Per Sids Listed In 3.1-3.5	Per Sids Listed In 3.1-3.5	Per Sids Listed In 3.1-3.5	Per Sids Listed In 3.1-3.5
3.12	Process Safety Information	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI
3.13	Process Hazards Analysis	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI	Applies Refer to applicable RI

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RICHMOND REFINERY INSTRUCTIONS

*PROCESS SAFETY MANAGEMENT

PROGRAM BY EQUIPMENT TYPE

APPENDIX II MECHANICAL INTEGRITY

Equipment Type		Pressure Vessels & Drums	Tanks	Piping Systems	Relief Systems, Vents & Other Devices	Controls, ESDs and Alarms	Pumps	Electric Drivers	Turbines	Compressors & Blowers	Fire Protection Systems	Fired Heaters & Boilers	Heat Exchangers	Electrical Distribution System Equipment
M. I. Element														
*3.14	Zero Incident Approach	RCFA: Tap-Root, Y-Tree, Reliability Equip. Histories (Meridium), JTA	RCFA: Tap-Root, Y-Tree, Reliability Equip. Histories (Meridium), JTA	RCFA: Tap-Root, Y-Tree, Reliability Equip. Histories (Meridium), JTA	RCFA: Tap-Root, Y-Tree, Reliability Equip. Histories (Meridium), JTA	RCFA: Tap-Root, Y-Tree, Reliability Equip. Histories (Meridium), JTA	RCFA: Tap-Root, Y-Tree, Reliability Equip. Histories (Meridium), JTA	RCFA: Tap-Root, Y-Tree, Reliability Equip. Histories (Meridium), JTA	RCFA: Tap-Root, Y-Tree, Reliability Equip. Histories (Meridium), JTA	RCFA: Tap-Root, Y-Tree, Reliability Equip. Histories (Meridium), JTA	RCFA: Tap-Root, Y-Tree, Reliability Equip. Histories (Meridium), JTA	RCFA: Tap-Root, Y-Tree, Reliability Equip. Histories (Meridium), JTA	RCFA: Tap-Root, Y-Tree, Reliability Equip. Histories (Meridium), JTA	RCFA: Tap-Root, Y-Tree, Reliability Equip. Histories (Meridium), JTA

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RICHMOND REFINERY INSTRUCTIONS

PROCESS SAFETY MANAGEMENT

APPENDIX III RELATED REFINERY DOCUMENTS MECHANICAL INTEGRITY

REFINERY INSTRUCTIONS RELATED TO MECHANICAL INTEGRITY

***1. MECHANICAL INTEGRITY RELATED REFINERY INSTRUCTIONS**

RI-102	PROCEDURES FOR INSTRUCTIONS, STANDARDS AND MANUALS
RI-300	INJURY & ILLNESS PREVENTION PROCESS
*RI-301	REQUIRED TRAINING AND DOCUMENTATION
RI-302	COLOR IDENTIFICATION & LABELING OF EQUIPMENT & PIPELINES
*RI-304	PREPARATION OF EQUIPMENT FOR TRANSPORTATION, SHOP REPAIRS, STORAGE, ETC.
RI-313	HAZARD COMMUNICATION STANDARD AND CHEMICAL INVENTORY PROCESS
RI-314	PROTECTIVE CLOTHING AND SAFETY EQUIPMENT
RI-337	PCB DIELECTRIC DEVICE REQUIREMENTS AND CONTROL
RI-340	FIRE HAZARD AND FIRE EQUIPMENT INSPECTIONS
RI-341	HOT WORK AND GENERAL WORK PERMITS
RI-400	EMERGENCY RESPONSE PLANS
RI-440	EMERGENCY PLANS & PROCEDURES FOR TOTAL POWER OUTAGE
RI-503	CONNECTIONS OR ALTERATIONS TO REFINERY UTILITY SYSTEMS
RI-509	CONNECTIONS TO REFINERY ELECTRICAL SYSTEM
RI-515	FIRE-FIGHTING WATER SYSTEM
RI-601	H ₂ S HANDLING EQUIPMENT
RI-602	LPG
RI-604/1604	LUBRICATION
*RI-609	MAINTENANCE AND SERVICING OF PRESSURE RELIEF DEVICES
RI-613	USE AND CONTROL OF HOSE
RI-617	CHEMICAL CLEANING OF REFINERY EQUIPMENT
*RI-621	ON-LINE LEAK REPAIR/LEAK SEAL
RI-636	PIPING AND EQUIPMENT FOR ANHYDROUS AMMONIA SERVICE
RI-641	TESTING AND SERVICING OF EMERGENCY BLOCK VALVE ACTUATORS
RI-642	POSITIVE MATERIAL IDENTIFICATION
RI-9025	SAFE FIRING OF FURNACES AND BOILERS
*RI-9900	CONTROL OF HAZARDOUS ENERGY (LOTO)

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RICHMOND REFINERY INSTRUCTIONS

PROCESS SAFETY MANAGEMENT

APPENDIX III RELATED REFINERY DOCUMENTS MECHANICAL INTEGRITY

REFINERY INSTRUCTIONS RELATED TO MECHANICAL INTEGRITY

***2. EXISTING REFINERY INSTRUCTIONS RELATED TO PSM (REFINERY INSTRUCTIONS 360-389)**

RI-360	RICHMOND REFINERY PSM POLICY
RI-361	EMPLOYEE PARTICIPATION PLAN
RI-362	PROCESS SAFETY INFORMATION
RI-363	PROCESS HAZARDS ANALYSIS
RI-366	CONTRACTORS
RI-367	PRE- STARTUP SAFETY REVIEWS
RI-368	MECHANICAL INTEGRITY
RI-370	MANAGEMENT OF CHANGE
*RI-371	NEAR LOSS, EVENT REPORTING, AND INCIDENT INVESTIGATION
RI-373	COMPLIANCE AUDIT POLICY
RI-374	SAFE WORK PRACTICES
RI-375	CONTROL OF ENTRY INTO PROCESS AREAS
RI-376	OPENING PROCESS LINES
RI-384	LATENT CONDITIONS
RI-389	ELECTRICAL SAFE WORK PRACTICES

***3. OTHER REFINERY DOCUMENTS RELATED TO M.I.**

- | | |
|---|--|
| • Maintenance Instructions | • Meridium Data Base Records |
| • Engineering Instructions | • Refinery Standard Drawing Book |
| • Refinery Operating Standards | • Refinery Pipe Class Manual |
| • Inspection Quality Control Manual | • Electrical Design Guide for Non E.E.'s |
| • Inspector/Analyst Reliability Training | • Certified Inspection Program |
| • *Welding Procedures | • Fitness For Service Manual |
| • *Inspection Quality Control Repair Manual | |

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